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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME 13 NUMBER 6 DECEMBER 1983

NEW PPODUCTS ASSURE HAPPY NEW YEAR FOR "INSTANT PHOTOGRAPHERS"

In the New Year, many photographers will be able to combine the versatility of their 35mm cameras with the excitement and convenience of immediate processing and viewing as a result of a silver diffusion transfer process, invented by **Polaroid Corporation**, 575 Technology Square, Cambridge, Massachusetts 02139.

Polaroid's 35mm Autoprocess transparency films add a new and important dimension to 35mm photography because these films can be used in any 35mm camera, allowing you to shoot full color and black and white slides and view them *in less than five minutes*. Packaged in conventional cartridges, each roll of film has a matching processing pack—the **Autoprocessor**—that lets you develop your film on the spot.

Processing the new silver halide films does not require a darkroom, washing or precise temperature control. Exposure and development processes for color and black-and-white films are similar. Processed film is dry and can be handled and projected immediately. All three Polaroid 35mm films have a clear, high-strength polyester base, and the close proximity of the silver halide image-forming layer to the positive receiving layer produces excellent resolution—superb picture quality.

A new Polaroid 35mm Autoprocess Gift Kit includes everything needed to process and mount 35mm slides instantly: the new Polaroid 35mm Autoprocessor; a slide mounter; 25 slide mounts; and two 12-exposure rolls of Polachrome 35mm color slide film. Suggested list price is $139.95. By using this new system, which Polaroid says "is as easy as loading film into your camera," the photographer's costs remain about the same as for conventional slide film, but he gets to see the results immediately without paying a big premium for rush service.

Polaroid has also developed the **Polaprinter**, a compact instant photographic system for producing 3¼" x 4¼" color and black and white prints from mounted 35mm slides which is not only a wonderful aid to the photographer who wants prints at home but doesn't have a darkroom, but is proving to be useful for reference print production for special libraries in such fields as medicine, graphic and fine arts, etc. and has eliminated possible losses and time delays of outside copying. Additional information may be obtained from Polaroid.

For those photographers who feel that their instant prints are a bit too thick or heavy, **Eastman Kodak Company**, 343 State Street, Rochester, N.Y. 14650, has developed Kodamatic Trimprint instant color film. With this film, after the picture is developed, the final print is separated from its backing and it then weighs less than half as much as previous Kodak instant prints. These beautiful silver halide color pictures also take up less space and can be handled and mailed far more easily than traditional instant prints.

ONLY 4% ANNUAL GROWTH IN WORLD SILVER MINE PRODUCTION

The Silver Institute's new publication **Mine Production of Silver 1982–1986** has just been completed. It shows the actual production in 1982 and the scheduled production in each of the years 1983, 1984, 1985, and 1986, for each of the silver mining countries of the world.

To meet the world demands for silver in photography, soldering, brazing, silverware, electronics and other industries, as well as for coinage and investment, silver is being mined in 57 countries. In 1983 this extensive effort is scheduled to produce 393.8 million troy ounces of silver, only 4% more than the 376.9 million troy ounces produced in 1982.

Nine countries represent more than 80% of this, and their 1983 scheduled mine production in millions of troy ounces of silver is as follows.

Mexico 57.0	United States 43.1	Poland.....21.0
Peru 55.2	Canada 39.2	Chile.....14.4
Soviet Union.....50.7	Australia.....33.5	Japan..... 9.9

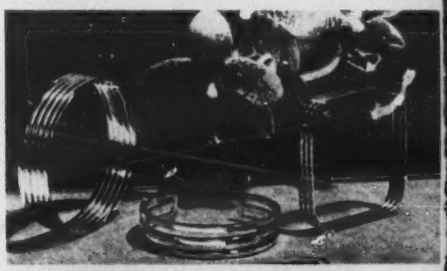
The figures for future years include all silver mine production for which preparations are being made. Storms, floods, strikes and other unforeseen events will decrease the figures.

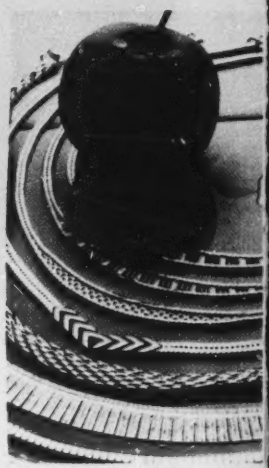
The report was prepared with the extraordinary cooperation of 233 mining and related enterprises which provided the information used in this world report, and their names are listed alphabetically by country in the publication. This nine page report is available upon request from The Silver Institute, 1001 Connecticut Ave., N.W., Washington, D.C. 20036.

STERLING SILVER JEWELRY RAPIDLY GAINING POPULARITY

For centuries, Europeans have cherished sterling silver for fine jewelry and as a result, Europeans have long worn sterling silver jewelry with pride. According to many Canadian jewelers, the same thing is happening in Canada now.

This new popularity of sterling silver jewelry originated in fashion-setting Quebec, but is now gaining momentum in other parts of Canada as reported by a spokesman of Montreal's **Chateau D'Argent**. This trend has been youth-oriented, but demand *has quickly spread to other consumer age groups because of sterling silver jewelry's price, styling, freshness and versatility.*





Canadian Jewelry magazine recently commented, "Silver jewelry is no longer equated only with the folksy styles of aboriginal people, 'peasant' looks from various continents or simply cheaper versions of gold merchandise. 'Bold,' 'striking,' 'tailored,' and 'elegant' are some of the terms manufacturers and retailers are using to describe what is selling now. Indeed, to be marketable, designs have to be fresh and smart looking. The tailored pieces need to complement classic clothing suitable for the working woman, while splashy and bold designs should highlight the latest fashions."

Zel Goodbaum, president of Toronto's **Directions East Trading Company** notes that because of silver's reasonable price, designers can produce larger, heavier, more imaginative pieces that appeal to people of all ages, but added that a definite following is found among young consumers who favor a bold, modern look.

The fact that the youth market forms a large portion of the Canadian consumer market offers retail jewelers a strong incentive for carrying sterling silver jewelry because Canadian jewelers believe young people who now buy silver jewelry pieces for less than $20 will probably become clients of their favorite jewelry stores, gradually buying higher priced jewelry as their earnings increase.

Although all sterling silver jewelry is enjoying increased popularity today, some items such as two-tone earrings, three-color collars, hand-crafted bangles, wide, bold bracelets, and fine old fashioned silver lockets, are enjoying particularly strong demand. Popular men's lines include sterling silver collar bars, tie pins and key chains.

In the United States, crystals of pure silver form the uniquely beautiful pendant on a sterling silver chain, as shown in the photo. These delicate silver crystals (no two alike) are encased between two clear watch glasses bound by a sterling silver ring. They are created by Medallion Consultants Inc., P.O. Box 88, Kellogg, Idaho 83837.

In Washington, D.C., The Phoenix Shop at 1514 Wisconsin Avenue reports that its current sales of sterling silver jewelry crafted in Mexico are the greatest in 28 years. They cover a wide range from sterling earrings at $5, to sterling necklaces up to $700. The artisans are creating sophisticated designs as well as their traditional pieces.

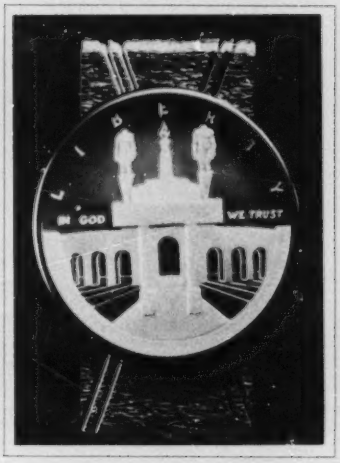
NEW SILVER COINS MAKE INTERESTING COLLECTIONS—AND BEAUTIFUL JEWELRY

Thousands of lucky collectors—new and old—are obtaining a 100 Zloty or 200 Zloty silver coin of Poland, *depicted right*, which features a portrait of Polish Pope John Paul II on the obverse and the official eagle coat-of-arms of Poland on the reverse. This coin represents one of the first times that a major country has ever placed a living person, other than a head of state or reigning royal family, on legal currency.

While thousands of collectors create inspirational silver coin collections on religious themes, others enjoy collecting silver coins depicting the flora and fauna of the world. **Coins commemorating athletes and athletic events also enjoy universal popularity**, and now, because of the 1984 Olympic Games, both collectors and non-collectors are purchasing silver Olympic coins.

The Winter Olympic Games open in Sarajevo, Yugoslavia on February 7, 1984. In this connection, the National Bank of Yugoslavia recently issued the fourth of five three-coin sterling silver series, including three denominations, each representing a different theme: The 100 Dinar coin "Ice Sports," the 250 Dinar "Yugoslav Historical Sites and Figures," and the 500 Dinar "Snow Sports." "Speed Skating" is the "Ice Sport" depicted on the most recent 100 Dinar coin *shown left*. Ice speed skating competitions started on Holland's canals some 300 years ago and skaters always provide a thrilling spectacle. The two other Yugoslav silver coins depict "Cross Country Skiing" on the 500 Dinar piece and the ancient city of Jajce on the 250 Dinar silver coin. Jajce was once known as the "shield" of Europe against the 16th century Turkish invasion, and is now a major tourist attraction.

In addition to owning a historical piece, the purchaser of an official Olympic coin contributes to the financing of the Olympic Games. For example, the 1984 Silver Dollar Olympic Coin showing the Gateway to the Los Angeles Coliseum on the obverse and an eagle on the reverse has a price that, by law, includes a surcharge of not less than $10. The same law stipulates that 50% of all surcharges received will be paid to the U.S. Olympic Committee to be used to train athletes, support local or community amateur athletic programs and to erect facilities for the training of the athletes. The remaining 50% of the amount of all surcharges shall be paid to the Los Angeles Olympic Organizing Committee to be used for staging and promoting the 1984 Olympic Games in Los Angeles.



Pictured at right is one of the many beautiful pieces of U.S. Olympic Coin Jewelry, manufactured by **Wideband Jewelry Corporation**, 170 Petersville Road, New Rochelle, N.Y. 10801 in sterling silver, which enable the collector not only to have, but to elegantly display the owner's U.S. Olympic coin "collection." Each piece is designed to retail for $100 or less.

1984 STERLING SILVER DESIGN COMPETITION

Creative students in more than 200 silversmithing schools are applying their artistic talents to making newly designed sterling silver pieces, to be judged by a panel of experts on May 8, 1984.

This competition is sponsored by the Sterling Silversmiths Guild of America with the cooperation of The Silver Institute, and of the Silver Institute member companies in Idaho.

In addition to cash awards by the Guild, there will be silver awards by The Silver Institute, and reimbursement toward the silver used by the students, presented at Wallace, Idaho on May 19 in connection with the celebration of the Centennial of silver mining in the Coeur d'Alene area.

SILVER INSTITUTE WELCOMES NEW MEMBERS

Welcomed to membership is Pyromet Inc., 5 Commerce Drive, Aston, Pennsylvania 19014 with President Jaydee W. Miller as Official Representative; and United Mining Corporation, Gold Hill Road, P.O. Box 370, Virginia City, Nevada 89440 with Timothy Collins, President, serving as Official Representative in Institute affairs, and Pietro Solari, Assistant Treasurer, as Alternate Official Representative.

JAPAN INDUSTRY MONTHLY SILVER USE RUNNING NEARLY 10% AHEAD OF LAST YEAR

The Silver Institute analyses of Japan Mining Industry Association reports of silver use.

	Average Monthly Silver Use in Thousands of Troy Ounces		
Industry in Japan	**Full Year 1982**	**Jan-Aug 1983**	**Change**
Photo Materials	3,053	3,299	+246
Other nitrate uses	462	544	+ 82
Soldering	548	597	+ 49
Brazing	279	262	− 17
Plating	195	226	+ 31
Electronics	289	247	− 42
Ware and Jewelry	108	87	− 21
Miscellaneous	335	531	+196
Total	**5,268**	**5,792**	**+524**

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	October 1983	September 1983	Jan-Oct 1983	Jan-Oct **1982	Full Yr 1982
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	4,064,975	4,088,235	4.2	3.6	3.7
From Coins	59,323	0	0.0+	0.0+	0.0+
From Old Scrap (used photo film & other products)	3,125,989	2,854,772	3.0	3.4	3.3
From New Scrap (in-plant clippings, waste)*	1,487,274	943,409	1.6	1.7	2.0
TOTAL PRODUCTION	8,737,561	7,886,416	8.8	8.7	9.1
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,144,820	2,303,656	3.0	2.8	3.2
Shipped Out as 999 Silver	6,250,654	6,106,883	5.7	5.8	5.9
TOTAL DISPOSITION	9,395,474	8,410,539	8.7	8.6	9.1
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	−657,913	−524,123	+1.6	+1.1	−0.2
THESE REFINERS' STOCKS AT END OF PERIOD	2,527,235	3,185,148	2.5	2.3	0.9

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	October 1983	September 1983	Jan-Oct 1983	Jan-Oct 1982	Full Yr 1982
THESE REFINERS' PRODUCTION, BY SOURCE				*MONTHLY RATE*	
From Primary (ores & concentrates)	13,971,997	13,318,742	12.9	11.1	11.8
From Coins	10,424	20,035	0.3	0.6	0.6
From Old Scrap (used photo film & other products)	5,831,027	6,427,807	6.1	#5.0	5.0
From New Scrap (in-plant clippings, waste)*	930,488	1,163,982	1.1	#1.1	1.0
TOTAL PRODUCTION	20,743,936	20,930,566	20.4	17.7	18.4
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	2,673,272	3,483,302	3.3	3.3	3.3
Shipped Out as 999 Silver	17,206,890	17,783,986	17.1	14.8	15.4
TOTAL DISPOSITION	19,880,162	21,267,288	20.4	18.1	18.7
RESULTING CHANGE OF THESE REFINERS'				*TOTAL FOR PERIOD*	
STOCKS (Production Minus Disposition)	+863,774	−336,722	−0.0+	−3.2	−3.1
THESE REFINERS' STOCKS AT END OF PERIOD	4,694,730	3,830,956	4.7	4.7	4.7

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of additional refiners. # Revised.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME 14 NUMBER 1 FEBRUARY 1984

SILVER INSTITUTE MEETING IN WASHINGTON

Silver Institute President Richard de J. Osborne presented the recommendations of the Executive Committee for the 1984 program to extend the uses of silver in industry, the arts, and as investment, during a meeting of The Silver Institute Board of Directors at The International Club in Washington, D.C. on January 30. The members of the Board were joined by other officials of member companies and guests from Canada, Great Britain, Japan, Mexico, Peru, United States and West Germany for the meeting, during which George Narcavage, Vice President of Marketing for Anaconda Minerals, was elected to serve on the Board of Directors. The Board authorized continuing the valuable work done in 1983, with the addition of three new projects: a Silver Institute sponsored Conference on Beneficial Bio-Medical Effects of Silver; promotion of sterling silver in cooperation with The Sterling Silversmiths Guild of America in its Sterling Silver Design Competition; and an Institute display of silver Olympic coins in Los Angeles at the time of the Summer Olympics.

Attending the Institute meeting were (Top l to r): Thomas Hoelandt, Norddeutsche Affinerie AG; Juan Sanchez-Navarro, Industrial Minera Mexico; and Pedro Sanchez Mejorada Jr., Penoles Metals & Chemicals enjoying part of the sterling silver display; and Robert Johnston of Sterling Silversmiths Guild of America, who provided the beautiful exhibit. Also at the meeting were (Bottom l to r) Richard de J. Osborne of ASARCO, President of The Silver Institute; Institute Vice President Justin L. Rice, Coeur d'Alene Mines; Harry M. Conger, Homestake Mining Co., and Institute Chairman William A. Griffith of Hecla Mining Co.

Meeting attendees heard a fascinating and informative presentation, illustrated with slides, by Robert M. Johnston, Executive Vice President of The Sterling Silversmiths Guild of America, on the creation and marketing of sterling silver products and their treasured use by people worldwide. Mr. Johnston reported that more than three million troy ounces of silver were used last year in the United States alone in the manufacture of sterlingware. He said that in addition to the traditional sterling wedding gift demands, large numbers of young professional and business people are important buyers of sterling tableware for home entertaining.

Operations Committee

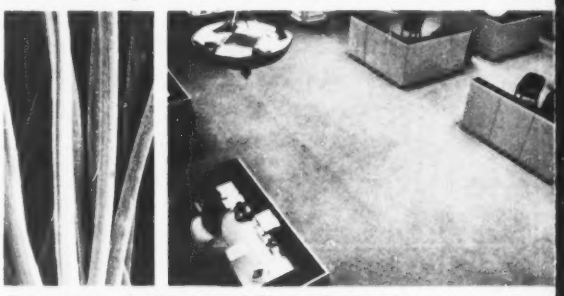
Eleven member company officials, shown pictured below, were appointed to a new Operations Committee approved by the Board, with John H. Boyd of Kennecott Corporation as Chairman. The Committee will be the coordinating body for the activities of The Silver Institute, including production of Institute publications, researching and presenting Institute statistics on silver, and the continuing development of new silver markets. The Operations Committee will have the responsibility of

Members of the new Silver Institute Operations Committee are shown: John H. Boyd, Kennecott Corporation, Chairman, upper left. On the bottom row from left to right are five committee members examining a new sterling design: Carlos Loret de Mola, Compania Minera Huampar, S.A.; Seiichi Ohtsuki, Mitsubishi Corporation; R. Thomas Torro, Industrias Penoles, S.A.; Edward W. Hoffstatter, Sharps, Pixley Inc.; and S.V.V. Lyman, Engelhard Corporation. Also committee members Richard W. Crawford, Leach & Garner Company; John W. Eschenlohr, Degussa AG; G. Michael Boswell, Sunshine Mining Company; Neil M. Kemp, INCO Limited; and Richard Demko, ASARCO Incorporated.

considering proposals for Institute activities, and making program and budget recommendations for the following year to the Executive Committee and members of the Board.

SILVER-COATED TEXTILE FIBERS FIND IMPORTANT APPLICATIONS IN MANY FIELDS

The deposit of a continuous fine coating of metallic silver on textile fibers is the industrial accomplishment of Sauquoit Industries, Inc., P.O. Box 1279, Scranton, Pennsylvania 18501. The Silver Institute staff consulted in the earlier research for this process, and when Sauquoit industrialized it, The Silver Institute Letter, beginning with its February 1976 issue, assisted in bringing the products to international attention. The silver-coated fabrics found immediate use in antistatic carpeting to prevent annoying sparks, and this application has been steadily increasing in hotels, hospitals, apartments, and office buildings. More recently the silver-coated fibers are being increasingly used in antistatic filters for clean-room-operations in electronic and medicinal manufacturing firms to eliminate statically charged dust particles.



Enlargement of silver-coated fibers which make up the excellent anti-static Downs Carpet used in Philadelphia National Bank headquarters.

Another growing use for these fibers is that, in the form of textiles they can be connected to the ground providing an electromagnetic screen, fending off unwanted radiation or signals that might otherwise disrupt sensitive instruments or electronic equipment. Also, when prepared in the form of wallcoverings or garments, the silver-coated fabrics provide an effective screening device to protect individuals in areas where there is a high level of electromagentic radiation.

When these silver coatings are applied to extremely fine fibers, they can be advantageously mixed in the pulps of security papers such as bonds, checks, and currency paper. These measured small inclusions of detectable silver can be custom designed to provide reliable identifying "fingerprints" within the security papers.

The potential uses of silver-coated fabrics in the field of medicine are arousing great interest in this material. When inserted in the casts for broken bones, mild electrical currents may be applied to the silver-coated fabric to encourage bone growth. This is somewhat similar to another use of silver electrodes to assist in bone healing which was reported in the July-August 1980 issue of The Silver Institute Letter.

The application of mild electric currents to silver-coated textiles when used for bandages, provides a stream of silver ions into a wound which inhibits the growth of bacteria.

If manufactured in the form of area garments, mild electrical charges can provide nerve stimulation for those paralyzed as a result of accident.

Clinical testing of these medical applications is proceeding, and promising results are being reported.

NEW SILVER TECHNOLOGY REVEALS EXPANDING USES OF SILVER

Sixty important advances made in 14 countries in the use of silver are summarized in the most recent issue of The Silver Institute's quarterly **NEW SILVER TECHNOLOGY**. A full description of each development is given, together with the names and addresses of those who did the work, and the applicable patent or technical journal designations. This unique publication is available by annual subscription at only US$30 per year for the four quarterly issues. **A convenient subscription form is enclosed.** Following are some of the new developments described in the January 1984 issue.

- Additions of silver nitrate to important polymers such as the polyamides, polyimides, polyethylenes, etc., raise their tensile modulus by 64% to 467,000 pounds per square inch.
- New glass systems based upon silver halides are shown to be purely ionic conductors with very high conductivities and are advantageous as solid electrolytes for solid-state battery systems.
- Silver is re-emerging as a major constituent of high-performance contacts for electronics and telephony as a consequence of new alloy studies.

- New silver alloys have been developed to withstand severe erosion incurred by high-power circuit breakers, resistant to seizing in automatic system controls, and other electrical applications by a comprehensive study of silver-rich alloys with carbides, nitrides, and borides.
- Silver halide in a new combination with polymeric materials and gelatin binders greatly improves the effectiveness of medical x-ray film.
- Silver is a key ingredient in a new and efficient catalyst to convert synthesis gas, a mixture of hydrogen and carbon monoxide, into methanol and ethanol, a useful automobile fuel.
- The production of formaldehyde, a major building block for plastics and plywood production, has been markedly improved by the use of a catalyst consisting of metallic silver and lead.

NEW MEMBER WELCOMED

The Silver Institute welcomed to membership **White Pine Copper Division, Copper Range Company,** P.O. Box 100, White Pine, Michigan 49971, USA, represented in Institute affairs by O. E. Anderson, Vice President.

MEMBER COMPANY OFFICIALS VISIT INSTITUTE OFFICE

Two leaders in activities of The Silver Institute recently visited the administrative office in Washington and consulted with the staff on the Institute's work. Dr. Alberto Benavides of Compañía de Minas Buenaventura S.A., Lima, Peru (left) is a member of The Silver Institute Board of Directors, and Past Vice President for South America.

Peter J. King of Australia Mining & Smelting Limited, Melbourne, Australia (right) is a member of The Silver Institute Board of Directors and Vice President for Australia and Asia.

WATCHING THE DYNAMIC FLOW OF SILVER

In the great complex of investment and labor which finds and moves silver from the depths of the earth to become the millions of silver products enriching our lives, there is a central gateway through which the silver flows. It is the silver refining operation—taking silver-containing materials and from them producing 999 fine (999 parts per 1000) or purer, silver bars.

Through the extraordinary cooperation of refiners in confidentially reporting the amounts of their individual operations, The Silver Institute is able to report the totals back to them promptly, and to publish the totals in The Silver Institute Letter.

One group of totals covers all known U.S. silver refiners. The Non-U.S. group covers all known refiners in seven countries and some in other countries. In each group we can watch the amounts of the silver bars made from four sources: FROM PRIMARY (ores and concentrates); FROM COINS; FROM OLD SCRAP (from used photo film and other used products); FROM NEW SCRAP (from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes).

FROM PRIMARY figures indicate monthly changes in the amounts of silver ore which are mined and concentrated by milling, flotation, smelting, leaching or other processes for delivery to refiners.

FROM COINS figures show the 999 silver made by melting and refining silver coins.

FROM OLD SCRAP figures show monthly changes in the amounts of used silver-containing products which people can afford to find, collect, and process at the price of silver current at the time.

FROM NEW SCRAP figures show the re-refining of scrap generated in the manufacturing processes of previous months.

TOTAL PRODUCTION figures are important because they show the monthly changes in the amounts of 999 and purer silver being created.

The refiners also report confidentially their individual DISPOSITION of the refined silver they produce, indicating how much is CONVERTED IN PLANT into fabricated products, and how much is SHIPPED OUT AS 999 SILVER BARS. Just as for production, The Silver Institute reports U.S. and Non-U.S. totals of these DISPOSITIONS.

The 999 silver converted into fabricated products *in the refiners' plants is only a part of all silver fabricated*. However, monthly changes in these figures are indicative of changes in total fabrication.

The amounts SHIPPED OUT AS 999 SILVER BARS include silver to be used by others to make silver products, as well as silver purchased as investment.

TOTAL PRODUCTION minus TOTAL DISPOSITION obviously results in a change in the refiners' stocks of 999 silver bars. If DISPOSITION is smaller than PRODUCTION, the refiners' stocks of bars increase. If DISPOSITION is greater than PRODUCTION, the stocks decrease. The Silver Institute reports these changes, as well as the resulting refiners' stocks each month.

In following the refiners' stocks of both the U.S. and the Non-U.S. groups from month to month, it is interesting to note that refiners' stocks have been amounting to only a fraction of a month of production.

In addition to figures for the current month, The Silver Institute shows the corresponding amounts for previous periods so that changes and trends can readily be seen.

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	December 1983	November 1983	Full Yr 1983	Full Yr 1982	Full Yr 1981
THESE REFINERS' PRODUCTION, BY SOURCE					
From Primary (ores & concentrates)	4,523,560	4,316,154	50.8	44.3	44.3
From Coins	0	0	0.1	0.1	1.5
From Old Scrap (used photo film & other products)	3,183,933	3,382,293	36.8	40.0	56.8
From New Scrap (in-plant clippings, waste)*	4,350,823	2,181,665	22.0	23.9	28.1
TOTAL PRODUCTION	12,058,316	9,880,112	109.7	108.3	130.8
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	5,906,397	3,989,102	40.0	38.0	40.8
Shipped Out as 999 Silver	6,919,490	6,493,997	69.5	70.5	90.0
TOTAL DISPOSITION	12,825,887	10,483,099	109.5	108.5	130.8
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	−767,571	−602,987	0.3	−0.3	0.0
THESE REFINERS' STOCKS AT END OF PERIOD	1,156,677	1,924,248	1.2	0.9	1.2

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	December 1983	November 1983	Full Yr 1983	Full Yr 1982	Full Yr 1981
THESE REFINERS' PRODUCTION, BY SOURCE					
From Primary (ores & concentrates)	15,112,046	12,871,590	157.4	141.0	154.5
From Coins	110,867	16,648	2.6	6.9	10.5
From Old Scrap (used photo film & other products)	5,278,411	5,177,915	71.5	49.4	74.8
From New Scrap (in-plant clippings, waste)*	834,951	910,250	12.6	23.6	13.7
TOTAL PRODUCTION	21,336,275	18,976,403	244.1	220.9	253.5
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	2,793,663	2,588,074	38.1	39.2	63.3
Shipped Out as 999 Silver	17,375,978	16,381,961	204.9	184.8	192.7
TOTAL DISPOSITION	20,169,641	18,970,035	243.0	224.0	256.0
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	1,166,634	6,368	1.2	−3.1	−2.5
THESE REFINERS' STOCKS AT END OF PERIOD	5,867,732	4,701,098	5.9	4.7	7.8

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS
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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XIV NUMBER 2 APRIL 1984

NEW GROWTH FOR SILVER IN INCENTIVES AND AWARDS

Silver used in "coins, medallions, and commemorative objects" in 1983, according to data gathered by the U.S. Bureau of Mines, showed an increase in America of 1,200,000 troy ounces over 1982.

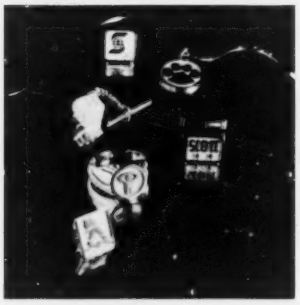
This news is not surprising when we consider the broad appeal of this precious metal. While its popularity once waned, largely in response to unprecedented market events, silver is now increasingly desired for its happy marriage of beauty and function, and for its intrinsic and enduring value. It continues to hold a special place in the heritage of many cultures, and has its own rich history in commerce and art.

Retailers report renewed interest in **sterling silver,** with its long tradition as meaningful gift and preferred investment, and events in the world of fashion have also fueled new interest in silver for ornament and jewelry. Stunning new high-fashion treatments feature silver in massive ornaments, and the use of gold and silver to complement each other—a new trend—has enhanced silver's prestige as well.

One industry source reports that **sterling vermeil,** in which a coating of gold of at least 120 microinches is applied to sterling silver, competes very well in the market for performance awards. Such awards were once the nearly exclusive domain of items gold-filled on base metal. "Silver is a precious metal," he said. "People respond to that."

In this climate of renewed interest and prestige, silver is the ideal vehicle for dynamic, successful incentive and awards programs.

Silver can be "tailored" to meet the needs of the most varied campaigns. Pictured at right are a handsome "American Prospector" medallion of 999 fine silver which has been a well-received premium in many promotions, and mirror-polish 100-ounce ingots often used to emphasize silver's role as an enduring store of value. The medallions are produced by **Engelhard Corporation** of 70 Wood Avenue, Metro Park Plaza, Iselin, New Jersey 08830; the ingots are by **Johnson Matthey Ltd.,** of 110 Industry Street, Toronto, Ontario M6M 4M1, Canada, and will be on display at the 46th Annual Premium Incentive Show to be held at the New York Coliseum, May 7–10.



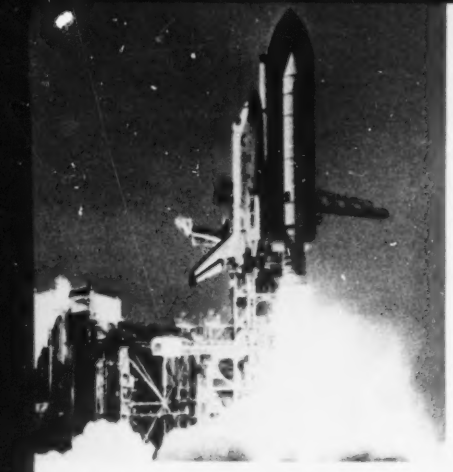
A great variety of incentive and premium items are immediately available, personalized for any organization—"from lapel pins to investment ingots," reports one provider—and can be created within a few weeks' lead-time. Pictured at left are some of the many types of silver incentive recognition awards produced by **Rembrandt Jewelry Manufacturing Ltd.,** 1100 Birchmont Road, Scarborough, Ontario M1K 5E5, Canada.

Other providers of a variety of items appropriate for silver promotional and incentive activities include the **Royal Canadian Mint,** 355 River Road, 6th Floor, Vanier, Ontario K1A 0G8, Canada; **Sunshine Mining Company,** 500 Plaza of the Americas, South, Dallas, Texas 75201; and **Handy and Harman, Inc.,** 850 Third Avenue, New York, New York 10022.

The time is clearly right for silver incentives and awards, and another year of growth is in prospect.

SPACE SHUTTLE ENGINES EXPLOIT UNIQUE PROPERTIES OF SILVER

Long treasured for its beauty, and for the rarity which has made it a time-honored medium of exchange, silver possesses properties as well which put it at the forefront of today's technology.



We are all familiar with silver's role in photography, and silver's importance as a conductor in electronics. Rocketdyne, a division of Rockwell International, employs yet other properties of sterling silver in roles vital to the Space Shuttle program.

The pumps which drive the shuttle's great engines must function in a harsh physical environment characterized by extreme variations in temperature, and must handle pure oxygen pressurized to many atmospheres. Such conditions would destroy many metals. Silver, however, has a unique combination of attributes which recommend it for this highly demanding environment.

Although oxygen is powerfully corrosive, silver is immune to its corrosive power, and silver plating is used on many seals to take advantage of this immunity.

Oxygen in combination with many materials results in explosively flammable mixtures, even at normal temperatures and pressures. Here silver is a doubly good choice. Of the many metals available, it is the most resistant to "sparking" from physical impact; in addition, silver is more stable as a metal than as its oxide, which means that oxygen cannot burn silver, no matter how high the temperature.

Silver also serves as a dry lubricant with special additional virtues. Excessive heat buildup in individual pump parts, over and above ambient engine temperatures, is of course undesirable, since this could lead to failure of the parts. Equally important, this heat in the presence of oxygen could cause ignition of some pump materials—always a prime concern. Silver seals at possible friction points help avoid this overheating. Silver conducts heat better than any other material, and it carries heat quickly away from the area of build-up.

When it is working as a lubricant, silver deforms slightly at the very surface of the seals, forming microscopic layers which slide easily over each other and over other metal surfaces. This does not compromise the basic strength of the silver parts, and the seals formed are "perfect"—even at high temperatures and pressures, they are gas-tight.

While the Space Shuttle is an unprecedented enterprise, the uses that silver finds in its engines are not exotic, and the properties exploited there find counterpart uses in the earth-bound marketplace. Fabrication of silver parts, even in this case for aerospace applications, requires no new or untried technology, for silver can be formed by time-tested casting, milling, and machining processes.

Silver plays, in fact, a key part in large industrial segments in ways which may go unrecognized—in the important field of "tonnage oxygen," for instance, which is crucial to much steel production and processing of chemicals: **silver is the material of choice** for cryogenic rupture seals; silver mechanical seals join aluminum to stainless steel pipes; and silver soldering and brazing join other pipes. Volumes of oxygen are shipped and handled safely and economically, using tough, precise, spark-resistant silver hardware.

SIGNIFICANT ADVANCES IN NEW SILVER TECHNOLOGY

The steady discovery of new, valuable uses of silver in medical and industrial applications continues to establish this unique precious metal as possessing properties of great advantage. As discoveries of these new applications are reported in technical papers and patents, the Institute's publication *New Silver Technology* summarizes their essentials for the members of the Silver Institute and for the annual subscribers to the publication. Among the 60 valuable Summaries in the April issue just published are the following:

- **For Underwater Structures,** the strength of lead can be made to equal that of aluminum by incorporating silver-coated graphite or ceramic fibers into the lead matrix.
- **For Photography,** silver chloride in new tabular grain form provides faster development of high contrast images for instant photographs.
- **For Self-Contained Power Sources,** addition of silver nitrate to lithium nitrate and chloride components has led to a new generation of high power-density thermal batteries.
- **For New Communications Systems,** silver halides are shown to be essential constituents in glasses for infrared transmission and infrared laser communication links.
- **For Health,** silver increases by 100 times the sensitivity for determining polypeptides, useful for the diagnosis of disease.

Details of these and other new silver developments may be obtained by sending a check for US$30 for the four 1984 quarterly issues of *New Silver Technology,* to The Silver Institute, 1001 Connecticut Avenue, N.W., Washington, D.C. 20036.

NEW SILVER COINS BENEFIT ISSUING COUNTRIES, SUPPORT UNITED NATIONS, AND DELIGHT COLLECTORS

In recent years, for countries and international organizations worldwide, the issuance of silver coinage has become an increasingly popular way to commemorate and support contemporary events and continuing institutions. In the past year alone, dozens of sports, political and cultural events have been celebrated with silver coinage. Likewise, silver coin issues have supported international efforts for environment protection, disabled persons, boy scouts, children, and wildlife. For numismatists, these coinage issues build into beautiful and valuable collections.

To the delight of coin collectors, this year the Food and Agricultural Organization of the United Nations has authorized the British Royal Mint to strike a new series of silver coins for 12 different countries to commemorate the World Fisheries Conference in Rome this June. These 1984 date coins continue FAO's tradition of issuing silver coinage in support of its "Food For All" Programs. For example, in 1981, 14 countries issued silver money to mark the FAO sponsored World Food Day. Meanwhile, each year the long list of countries supporting the various UN/FAO Programs with silver money issues grows.

The present FAO series marking the World Fisheries Conference consists of coins from Cape Verde, Ghana, Maldives, Malta, Mozambique, Seychelles, Somalia, Turkey, Portugal, São Tomé, Uruguay and Liberia; and includes some Piéfort (double-thick) editions. The hallmark of the series is the continuity of design among the coins' reverses achieved with a stylized water pattern in a circle upon which a fish, boat, or trap associated with each country's culture is superimposed. The words FAO WORLD FISHERIES CONFERENCE 1983–84 and the face value of the coins are then set around the perimeter. Examples of six of these coins are shown above.

The initial FAO-inspired coins were the first in the 2,500 years of monetary history to convey such a common international theme. In addition to serving as an effective and prestigious means for spreading the important message worldwide of the need to increase food and agricultural production, the coin program has directly benefited its many participants in other ways.

Countries which issue the silver money have realized a seignorage profit from sales of these coins, which can be used to increase the countries' agricultural outputs. The United Nations/Food and Agricultural Organization, too, earns revenue from the silver commemoratives, which may be used to expand its programs and to finance agricultural field projects throughout the world.

For collectors, the coins they purchase form an impressive international coin collection and serve as beautiful tokens of their support for the aims of the FAO "Food For All" program. As well, the purchasers of many of these coins have found that their numismatic values have increased with time.

Orders and inquiries regarding the coins marking the World Fisheries Conference and other FAO coins should be addressed to **British Royal Mint,** c/o Barclays Bank of New York, N.A., P.O. Box 2570, New York, New York 10163; or to **FAO Money and Medals Programme, Food and Agricultural Organization,** 00100 Rome, Italy.

NEW MEMBERS WELCOMED

The Silver Institute welcomed to membership **Corporacion Minera Nor Peru S.A.,** Avenue Pardo y Aliaga 535, San Isidro, Lima 27, Peru, represented in Institute affairs by Carlos Jahnke G., Director and General Manager; and **Sindicato Minero Pacococha S.A.,** San Martin 864, Miraflores, Lima, Peru, represented in Institute affairs by Francisco Torres-Belon L., Manager.

SILVER USE RESUMES INCREASE

Monthly rates of using 999 commercial silver by participants in The Silver Institute monthly Silver Conversion Series are now increasing again, as shown below.

Million troy ounces per month used, and percent change from previous year

	By 41 U.S. Participants		*By 20 Non-U.S. Participants*
January-December 1980	11.04		5.11
January-December 1981	11.67 +6%		5.99 +17%
January-December 1982	12.56 +8%		6.97 +16%
January-December 1983	10.97 −13%		5.76 −17%
January-February 1984	12.68 +16%		6.89 +20%

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	February 1984	January 1984	Jan-Feb 1984	Jan-Feb 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	4,543,118	3,726,677	4.1	4.3	4.2
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,132,957	2,337,404	2.2	3.2	3.1
From New Scrap (in-plant clippings, waste)*	1,738,402	1,029,516	1.4	1.3	1.8
TOTAL PRODUCTION	8,414,477	7,093,597	7.8	8.8	9.1
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	2,792,834	1,983,345	2.4	2.7	3.3
Shipped Out as 999 Silver	5,166,658	4,110,986	4.6	4.5	5.8
TOTAL DISPOSITION	7,959,492	6,094,331	7.0	7.2	9.1
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	454,985	999,266	1.5	3.3	0.3
THESE REFINERS' STOCKS AT END OF PERIOD	2,610,928	2,155,943	2.7	4.2	1.2

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	February 1984	January 1984	Jan-Feb 1984	Jan-Feb 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	15,476,149	12,287,992	13.9	12.9	13.1
From Coins	110,017	120,201	0.1	0.5	0.2
From Old Scrap (used photo film & other products)	4,721,790	4,309,779	4.5	3.9	6.0
From New Scrap (in-plant clippings, waste)*	1,033,249	974,815	1.0	2.1	1.1
TOTAL PRODUCTION	21,341,205	17,692,787	19.5	19.4	20.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	2,245,402	2,750,932	2.5	3.1	3.2
Shipped Out as 999 Silver	17,648,287	15,862,910	16.8	16.7	17.1
TOTAL DISPOSITION	19,893,689	18,613,842	19.3	19.7	20.2
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	1,447,516	−921,055	0.5	−0.6	1.2
THESE REFINERS' STOCKS AT END OF PERIOD	6,394,193	4,946,677	6.4	4.1	5.9

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes.

THE SILVER INSTITUTE

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1001 Connecticut Avenue NW, Washington, D.C. 20036. Tel. (202) 331-1485 and 331-1228

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XIV NUMBER 3 JUNE 1984

WALLACE IDAHO CELEBRATES CENTENNIAL

Most mining towns enjoy a brief flush of prosperity, and suffer a long decay and ultimate disappearance. The map is dotted with famous names, now ghost towns marked only by tailings piles and abandoned mine shafts. It is special cause for celebration that one of these towns, Wallace, Idaho, has not only escaped this usual fate, but after a full century is still a productive, vital mining community.

Wallace is at the heart of Idaho's "silver valley," as it is known to its inhabitants, the world's most productive silver mining area, and one of the few where silver is mined as the primary metal rather than as a by-product. The valley is also rich in other mineral resources, such as zinc, lead, and copper. It has in the last hundred years produced nearly a billion troy ounces of silver.

This record of production has represented a real challenge for silver producers. As silver is mined at ever greater depths—sometimes more than a mile beneath the surface—additional technology must be brought into play to insure the safety and well-being of the miners. Producers must cope as well with the logistics of breaking and moving many tons of rock to extract the few ounces of silver contained in each ton. Wallace has also had to face the movements of a volatile metals market.

Governor John V. Evans of Idaho, and Jodie Lilienkamp, Wallace Centennial Queen.

Over the years Wallace has survived these challenges, and with their passing has mellowed from brawling frontier origins into a center of civic pride. She has lost none of her exuberance. The beginning of the summer-long celebration of her hundredth birthday saw her streets alive with ladies in period dress and men sporting canes, beards, and mutton-chop whiskers. The celebration is also remarkable in bringing together representatives from all phases of silver production—miners, refiners, designers, fabricators, and merchandisers.

A highlight of the centennial ceremonies was the awarding of prizes for a special competition for sterling design sponsored jointly by the Sterling Silversmiths Guild and The Silver Institute. Five "silver valley" mining companies provided supplementary aid toward the purchase of the silver used by the 169 contestants from 45 colleges and schools of design. These companies were ASARCO Inc., Callahan Mining Corp., Coeur d'Alene Mines Corp., Hecla Mining Co., and Sunshine Mining Co.

The Silver Institute brought 6 of the winners with their prize-winning sterling pieces to Wallace where they were the guests of the Institute. There, Colby Lunt and Robert Johnston for the Sterling Silversmiths Guild, presented them with cash awards for excellence in general design and special flatware design. Richard L. Davies for The Silver Institute presented each winner with a handsome personally engraved 10 troy ounce bar of pure silver.

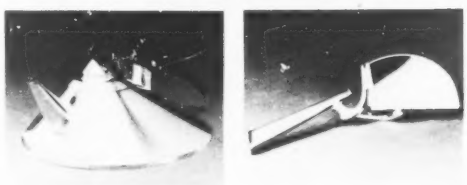
The events brought together leaders of industry and education, and town, county, state and national government officials. The able Master of Ceremonies was Harry F. Magnuson of Silver Institute member company Clayton Silver Mines and recipient of Idaho's Businessman of the Year Award.

Left above, l. to r., Senator Steven D. Symms; Robert Johnston, Executive Vice President, Sterling Silversmiths Guild; Senator James A. McClure; Congressman Larry E. Craig; Colby Lunt of Lunt Silversmiths, Chairman, Design Competition Committee of the Sterling Silversmiths Guild. Left below, l. to r., Harry F. Magnuson of Clayton Silver Mines; William A. Griffith of Hecla Mining Company and Chairman of The Silver Institute; Frederick D. Owsley of ASARCO Inc.; and Charles D. Snead of Callahan Mining Corporation.

Above, l. to r., John J. Horn, of Coralville, Iowa and the University of Iowa, first prize winner for flatware; Mark E. Fortune, of Bloomington, Indiana and Indiana University, first prize winner for general design excellence. Dressed to inspect working mines are sterling silver design winners Kye-Yeon Son, of Bloomington, Indiana and Indiana University; Claire Sanford, of Allston, Massachusetts and Boston University; Lee Boroson, of Greenwich, Connecticut and the State University of New York, New Paltz; and Heather N. Williams of Weston, Connecticut and the Philadelphia College of the Arts.

The design winners and other visitors went a mile underground in fascinating tours of the Galena and the Lucky Friday silver mines and visited the new Sunshine silver refinery, all in actual operation, providing a firsthand appreciation of the tremendous undertakings by which silver is produced for its ultimate uses in art, commerce, and industry.

Expressing the optimism with which Wallace, Idaho greets the next century, a repository for a time capsule was drilled on the lawn of the Shoshone County Courthouse, to be opened at the city's bicentennial celebration a hundred years from now.



Pictured left are brilliant products of the craftsmanship and skill of award winners. Shown are a silver teapot by Mark Fortune, sterling silver flatware by John Horn, and a lovely hand mirror created by Heather Williams.

Right, coming out of the Lucky Friday mine are Robert Mansell of Engelhard Corp. and Peter J. C. Mosse of N.M. Rothschild and Sons. Far right, silver refining specialist weighing pure silver crystals produced by the Sunshine Mining Company refinery.

SEMINAR ON PLUMBING MATERIALS AND DRINKING WATER QUALITY HIGHLIGHTS SILVER-TIN SOLDERS

The United States Environmental Protection Agency, Office of Drinking Water, and the Drinking Water Research Division of the Office of Research and Development, held a seminar in Cincinnati, Ohio to review the problem of metal dissolution in household drinking water. The considerable data presented made clear the difficulties that local water departments face with ground and runoff waters entering their distribution systems. With many of these waters, dissolving of the bonding materials used in household supply lines will occur. The wide variation of source-water quality, and the difficulty of keeping such waters under constant control brought out the merits of silver-tin solders for copper water distribution systems.

John Courchene, Seattle Water Department, stated that when the City of Seattle introduced fresh mountain waters into its mains, the dissolving of the solders in use there became so serious that an ordinance was passed to ban the use of any solders containing more than 0.02% lead, and similar regulations are now being adopted in other jurisdictions.

Richard Ballentine, Director, J.W. Harris Co., stated that not only are silver and tin non-toxic, but that silver-tin solders have ideal metal wetting properties, reducing the time and cost of plumbers to install copper piping, and making perfect seals much stronger than those provided by other solders.

Henry Sosnin, Philadelphia mechanical engineer, reported that the amount of silver-tin solder required for a dwelling would cost less than $10 over the cost of lead or antimony solders. Robert Warner, Sierra Club representative, said that $10 per house would be a small premium to pay for the non-toxicity of a copper drinking water system bonded with silver-tin solder.

However, it was pointed out that the saving in labor cost by using the silver-tin solder is greater than the additional solder cost so that copper drinking water systems installed with silver-tin solders are not only non-toxic and stronger, but their entire installed cost is less.

Since many plumbers and contractors are not yet acquainted with these facts, it is necessary for the builder or the home buyer to specify that the copper drinking water system be installed with silver-tin solders.

NEW BOOK DESCRIBES ALL SILVER COINS ISSUED IN PAST YEAR

From the Falkland Islands just off the southern-most tip of South America, to the northern reaches of Finland, and to the skyward lands of the Asian mountain country Nepal; from China, the world's most populous country, to tiny Ascension Island in the Pacific and the nation-city of Singapore, a total of **76 of the world's Monetary Authorities issued silver money in 1983**, continuing a centuries old tradition in man's history of coining the white precious metal.

For coin collectors and investors a complete description of the design, size, weight, and silver content of all the beautiful and varied silver coinages, and information on the number of coins in each issue can only be found in this **new, unique, and comprehensive Silver Institute publication MODERN SILVER COINAGE-1983.**

All of the many different silver coin denominations issued in 1983 are detailed in the book. In these coinages history is relived: a stone age tomb, the evolution of the Thai alphabet, the daring expeditions of Marco Polo, man's first ascent of Mount Everest, and man's conquest of flight. Also told in these coinages are accomplishments of George Washington, philosopher Karl Marx, Austrian writer Jaroslav Hasek, and Italian patriot Guiseppe Garibaldi; the liberation of Venezuela by Simon Bolivar; and the births of the nations of Israel, Brunei and the Dominican Republic.

Also, a great diversity of contemporary persons, places and events are commemorated and honored in 1983 silver coinage, including the 1984 Summer and Winter Olympic Games, Boy Scouts, Environmental Protection, World Food Day, German Opera, Vienna City Hall, the travels of Pope John Paul II, United Nations International Year of Disabled Persons, and current rulers of countries worldwide.

In addition, this unique reference book also gives the name and address of each mint which produced each coinage. **Copies of MODERN SILVER COINAGE-1983 may be obtained for US $7.00 each, including postage, from The Silver Institute, 1001 Connecticut Avenue, N.W., Washington, D.C. 20036 USA.**

REPRESENTATIVE OF MEMBER COMPANY IN INDIA VISITS SILVER INSTITUTE OFFICE

Recently welcomed to the Institute's Washington offices (and shown in the photo) were Director and Mrs. S.G. Daga of Luxmi Traders, 2 India Exchange Place, Calcutta 700001, India. An Institute member for years, Luxmi is a leading manufacturer of silver and gold electrical contacts and silver and gold brazing materials.

JAPANESE PRODUCTS USE MORE SILVER

Reports by the Japan Mining Industry Association analyzed by The Silver Institute show the following usage of silver in Japanese products, in troy ounces.

	1982	*1983*	*% Change*
Photographic materials	36,636,275	40,590,050	+11%
Soldered and Brazed Equipment	9,918,082	10,826,962	+ 9%
Mirroring and Electronic Products	9,002,418	10,133,165	+13%
Sterling and Plated Items	3,628,385	3,917,542	+ 8%
Other Products	4,015,985	6,530,179	+63%
TOTAL	63,201,145	71,997,899	+14%

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	April 1984	March 1984	Jan-Apr 1984	Jan-Apr 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	5,220,387	4,168,595	4.4	4.2	4.2
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,692,889	2,672,761	2.5	3.3	3.1
From New Scrap (in-plant clippings, waste)*	1,913,674	1,604,557	1.6	1.6	1.8
TOTAL PRODUCTION	9,826,950	8,445,913	8.4	9.1	9.1
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,293,064	3,041,910	2.8	3.2	3.3
Shipped Out as 999 Silver	5,937,300	6,366,444	5.4	5.1	5.8
TOTAL DISPOSITION	9,230,364	9,408,354	8.2	8.3	9.1
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	596,586	−962,441	1.1	3.2	0.3
THESE REFINERS' STOCKS AT END OF PERIOD	2,245,073	1,648,487	2.3	4.1	1.2

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	April 1984	March 1984	Jan-Apr 1984	Jan-Apr 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	12,867,277	14,430,588	13.8	12.9	13.1
From Coins	100,610	100,803	0.1	0.5	0.2
From Old Scrap (used photo film & other products)	4,019,942	4,400,380	4.4	5.5	6.0
From New Scrap (in-plant clippings, waste)*	927,101	915,962	1.0	1.7	1.1
TOTAL PRODUCTION	17,914,930	19,847,733	19.2	20.6	20.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	1,433,545	2,104,705	2.1	3.5	3.2
Shipped Out as 999 Silver	16,003,981	17,379,413	16.7	17.2	17.1
TOTAL DISPOSITION	17,437,526	19,484,118	18.9	20.6	20.2
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	477,404	363,615	1.4	−0.3	1.2
THESE REFINERS' STOCKS AT END OF PERIOD	7,235,212	6,757,808	7.3	4.4	5.9

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes.

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INFORMATION ON SILVER FOR INDUSTRY

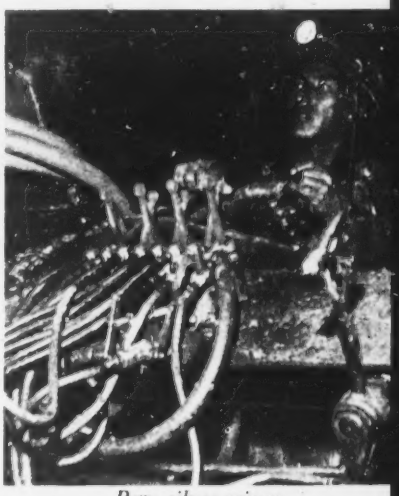
VOLUME XIV NUMBER 4 AUGUST 1984

ANNUAL MEETING HONORS PERU

More than a hundred officials of member companies and guests joined in the 14th Annual Meeting of The Silver Institute at The Yale Club of New York City on June 21-22. The Institute is made up of member companies in 20 countries, but those attending this meeting especially honored Peru and leaders of its silver industry. The meeting enjoyed reports from Felix Remy and Alfredo Pereyra of Centromin Peru, S.A.; Alberto Benavides of Cia.de Minas Buenaventura, S.A.; Carlos Loret de Mola of Cia. Minera Huampar, S.A.; and Andreas Raczynski of Minas Arcata, S.A.

Those present were delighted to hear and join with Sasha Davies Javor in songs of Peru and other countries.

The following officers were elected: Chairman, William A. Griffith of Hecla Mining Co.; President, Richard de J. Osborne of ASARCO Inc.; Vice President—Canada, J. A. Butterfield of Equity Silver Mines Ltd.; Vice President—Eastern U.S., Harry B. Carson of AMAX Inc.; Vice President—Western U.S., Justin L. Rice of Coeur d'Alene Mines Corp.; Vice President—Mexico and Central America, Ricardo Chico of Cia. Fresnillo, S.A.; Vice President—South America, Ernesto Baertl of Minas Arcata, S.A.; Vice President—Australia and Asia, Peter J. King of Australian Mining and Smelting; and Vice President—Europe and Africa, Jacques Bagory of Comptoir Lyon-Alemand Louyot; Treasurer, William P. Lohden of Callahan Mining Corp.; and Executive Director and Secretary, Richard L. Davies.



Peru silver miner

Silver Institute President Osborne reported on the work of the Institute in the past year to increase the uses of silver in corporate incentive award programs, in soldering and brazing, in coinage, in investment, and in many other applications, pointing out the benefits of this work to all sectors of the silver industry.

Felix Remy, Executive President of CENTROMIN Peru, S.A. (shown at right) told The Silver Institute meeting that throughout Peru's cultural history, silver has played a leading role. The Incas were splendid metallurgists, and by the time of the Chimu culture, about 1400 A.D., silver plating on copper objects was accomplished.

Following the conquest of Peru by the Spaniards, the mining of silver was expanded and new mines discovered. The further discovery of rich mercury mines, making possible amalgamation, increased the efficiency of producing silver metal from its ores. **By 1800 there were 728 silver mines active there, and Peru had a silver economy.** Production of silver dropped during the

Upper left (l. to r.): Pierrette & William P. Lohden of Callahan Mining, Silver Institute Treasurer; Cheryl & Richard de J. Osborne of ASARCO, Silver Institute President.
Lower left: Derek White of Mount Isa Mines, Australia; Nobuyasu & Hideko Ishida of Nippon Mining; Sharon Ziemian of Merrill Lynch Metals.

At right (l. to r.): Mrs. Robert Passaro of MINPECO; Alberto Benavides of Minas Buenaventura; Carlos Loret de Mola of Minera Huampar; Philip F. Mendizabal of CENTROMIN PERU; Andreas Raczynski of Minas de Arcata; Alfredo Pereyra of CENTROMIN PERU; Eduardo Loret de Mola of Minera Huampar; and Consuelo & (above) Hans Stein of Minera Nor Peru.

Above (l. to r.): Sasha Davies Javor; Christopher & Isabel Behn of Norddeutsche Affinerie; Werner Knies of Degussa; William A. Griffith of Hecla Mining, Silver Institute Chairman; Marvin K. Kaiser of Ranchers Exploration and Development; and Tatsuo Arima of Mitsubishi Metal.

At right: Neil M. Kemp of INCO, Canada, and Juan Sanchez-Navarro of Industrial Minera Mexico.

At left, from top: E. Viet Howard of Sunshine Mining; Paul B. Warrington of Noranda; Raymond Nessim of Philipp Brothers; Edward R. Bergin of ASARCO; and Donald S. Reiter of Merrill Lynch Metals.

1890's, rose after 1933, and dropped during the Second World War. When that war ended in 1945, production increased. It was further stimulated by the Mining Code which the firm of Klein & Saks developed for the Peru government in 1950 and which provided new mining incentives. By 1968, annual silver production reached 34 million troy ounces; by 1980, 45 million troy ounces.

Now, about 80% of Peruvian silver comes from 28 mines located in the Western Andes. These mines produced 47 million troy ounces in 1983. The remaining mines produced 8 million troy ounces. All but eight of these mines are primarily copper, lead, and zinc producers. Their combined production placed Peru as the top producer of silver in the world.

Presently, eight new mining projects have either been started or are under study. Three are mine extensions and enlarged ore concentration facilities, the investment in which is expected to reach US$380 million. Feasibility studies and preliminary engineering studies on new mining ventures were reviewed by Mr. Remy, showing that Peru's commitment to its mining economy, and to silver as an essential element of the economy will continue into the future.

AT THE OLYMPIC GAMES IN LOS ANGELES

Enclosed is the special Olympic Issue of The Silver Institute Letter, distributed during the Olympic Games to the thousands of visitors at the U.S. Treasury, U.S. Mint, Panda American Booth at the Coliseum in Los Angeles. It reveals the importance of silver coinage throughout the Olympic tradition and gives an additional dimension to the desirability of the U.S. Olympic Silver Coins which are now available from coin dealers, banks, and other representatives of the U.S. Mint.

SILVER INCENTIVE AND RECOGNITION AWARDS PROMOTED

Once a year the personnel administrators for the nation's largest companies and corporations meet to review new developments in personnel management. In June, some 2,000 attended their Annual Convention held at the Chicago Hyatt Regency Hotel. Of these, 955 who visited The Silver Institute and The Gold Institute booths and heard presentations by our staff, signed forms indicating their strong interest in the use of silver and gold in employee recognition programs.

The personnel administrators were attracted to the spectacular array of silver bullion and medallions, the sterling silver bowls and cups, sterling tableware and gifts, and the silver Olympic coins displayed in a setting of outstanding photographs of silver and sterling silver pieces.

There was a clear indication on the part of these managers that **silver will now be increasingly used for recognition awards,** especially the larger awards.

Among the companies whose personnel managers visited the booths and can further the use of silver in their programs were the Travelers Insurance Companies, Northrop, Hughes Aircraft, Dow Corning, FMC, Monsanto, Sheraton, Olin, Bank of America, Motorola, American Motors, Whirlpool, Federal Express, and Johnson & Johnson. They admired the important silver products of Engelhard Corporation; Johnson Matthey Ltd., Canada; Rembrandt Jewelry Mfg. Ltd., Canada; Sunshine Mining Company; the Royal Canadian Mint; and sterling silverware from Kirk Steiff Company, Lunt Silversmiths, Oneida Silversmiths, Towle Silversmiths, and Wallace Silversmiths, members of the Sterling Silversmiths Guild of America.

NEW MEMBERS WELCOMED

The Silver Institute welcomed to membership **Minas de Chamole, S.A.**, Camino al Desierto No. 31-401, Col. San Angel, Deleg. Alvaro Obregon, Mexico 20, D.F., Mexico with Cesar Balsa Carralero, Chairman, as Official Representative; and **Merrill Lynch Metals Inc.**, Two Broadway, New York, N.Y. 10004, with Donald S. Reiter, Vice President, as Official Representative.

SILVER PROVIDES MEDICINE WITH A POWERFUL TOOL FOR CLINICAL DIAGNOSTICS

The addition of silver to clinical diagnostics is **like having a new set of eyes**, said a physician from the National Institutes of Health, Bethesda, Maryland. Silver complexes now allow the detection and visualization of the smallest building blocks of human cells in concentrations of as little as 10 trillionths of a gram per square millimeter. The extreme sensitivity of silver allows the accurate assay of small amounts of cerebrospinal and embryo fluids for diagnosing disease and prenatal condition. P.D. Mehta and B.A. Patrick, New York State Institute for Basic Research in Development Disabilities, Staten Island, New York, can now, with silver, directly use unconcentrated cerebrospinal fluid to identify the antibodies that are indicators of the presence of multiple sclerosis. E. Rengifo, S. Quintero, and Z. Marinello, National Institute of Oncology and Radiobiology, Havana, Cuba, find silver the superior diagnostic tool for the routine diagnosis of Hodgkin's disease, a cancer of the lymph nodes.

C. R. Merril, U.S. Department of Health and Human Services, Washington, D.C., uses silver complexes with electrophoresis, a separation influenced by an electric charge, to effect a quantitative analysis of the basic building blocks, proteins, the essential constituents of all living cells. Their detection and identification opens the opportunity for accurate monitoring for pathophysiologic changes in disease states, diagnosing genetic diseases, and assaying protein abnormalities or pathologies such as may occur in liver and heart disease.

Silver complexes, unlike others used to detect proteins, do not kill or inactivate them. As a result, the desired proteins, clearly identified by the silver complexes, may be separated and further studied as active constituents in experiments.

The silver technique is useful outside medicine also. Silver protein assay provides a distinct pattern that can be used to fingerprint the proteins in natural foods. For example, with silver, it is now possible to detect proteins of any non-beef products which might have been added to ground beef.

The use of silver complexes for the identification of normal or abnormal proteins is a new powerful tool in the fields of health and dietetics. The fact that **silver complexes are 100 times more sensitive than other means of detecting proteins** means that their contribution to these fields will be significant.

SILVER MAKES NEW BREAKTHROUGHS IN TECHNOLOGY

Members of The Silver Institute and annual subscribers to the quarterly publication, NEW SILVER TECHNOLOGY, are alerted to important new breakthroughs made possible by silver. Among the Summaries which make up the July issue, just published, are descriptions of the following:

- **For diagnostics**, the first high-resolution phase lens for use at x-ray wavelengths is made with silver.
- **For computers**, a light-activated switch using a silver cyanoquinodine compound, can switch between two stable states ten times faster than the magnetically activated switches, now in use.
- **For welding**, electrodeposited silver is used in joining metallurgically incompatible metals such as type 304 stainless steel and beryllium.
- **For medicine**, bandages made with silver salts impregnated in carbon fibers provide durable anti-bacterial protection for common and severe wounds.
- **For engineering**, tests with silver solid-film lubricated ball bearings moving in bare or coated races, show how silver acts as a superior dry lubricant.

Details of these and other new silver developments may be obtained by sending a check for US$30 **for a subscription to the four 1984 quarterly issues of NEW SILVER TECHNOLOGY,** to The Silver Institute, 1001 Connecticut Ave., N.W., Washington, D.C. 20036.

LESS SILVER FROM COINS AND SCRAP

The following Table shows the steady decline in refined silver recovered from Coins, Old Scrap and New Scrap—both in troy ounces and in percent of total production.

SILVER PRODUCTION BY COMBINED U.S. AND NON-U.S. PARTICIPATING REFINERS

Monthly Rate in Million Troy Ounces and as Percent of Total Production

	Jan-Jun 1984	*1983*	*1982*	*1981*	*1980*
From Primary	18.4 / 66%	17.6 / 59%	15.4 / 56%	16.6 / 52%	15.4 / 44%
From Coins & Scrap	**9.3 / 34%**	**12.1 / 41%**	**12.0 / 44%**	**15.5 / 48%**	**19.7 / 56%**
TOTAL PRODUCTION	27.7	29.7	27.4	32.0	35.1

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	June **1984	May **1984	Jan-Jun **1984	Jan-Jun **1983	Full Year **1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	4,703,531	4,759,265	4.8	4.3	4.4
From Coins	6,000	2,000	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,410,686	3,836,319	2.7	3.2	3.1
From New Scrap (in-plant clippings, waste)*	1,801,244	1,825,409	1.7	1.7	1.8
TOTAL PRODUCTION	8,921,461	10,422,993	9.1	9.2	9.4
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,290,186	3,958,661	3.1	3.2	3.3
Shipped Out as 999 Silver	7,679,849	4,870,608	6.0	6.0	6.0
TOTAL DISPOSITION	10,970,035	8,829,269	9.0	9.2	9.3
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	−2,048,574	1,593,724	0.6	0.2	0.3
THESE REFINERS' STOCKS AT END OF PERIOD	1,790,223	3,838,797	1.8	1.1	1.2

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	June 1984	May 1984	Jan-Jun 1984	Jan-Jun 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	13,234,876	13,267,407	13.6	12.8	13.1
From Coins	122,435	110,663	0.1	0.4	0.2
From Old Scrap (used photo film & other products)	3,054,798	3,702,335	4.0	5.8	6.0
From New Scrap (in-plant clippings, waste)*	767,494	875,011	0.9	1.5	1.1
TOTAL PRODUCTION	17,179,603	17,955,416	18.7	20.5	20.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	1,212,358	1,242,975	1.8	3.4	3.2
Shipped Out as 999 Silver	15,424,434	18,693,583	16.8	17.2	17.1
TOTAL DISPOSITION	16,636,792	19,936,558	18.7	20.6	20.2
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*		
STOCKS (Production Minus Disposition)	542,811	−1,981,142	−0.1	−0.5	1.2
THESE REFINERS' STOCKS AT END OF PERIOD	5,796,881	5,254,070	5.8	4.2	5.9

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of additional refiners. ≟ Revised.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XIV NUMBER 5 OCTOBER 1984

WIDE USE OF SILVER COINS INCREASES

The Bank of Mexico is now releasing its new silver bullion coin, the "Libertad". Ricardo Chico of Cia. Fresnillo, S.A. and Vice President of The Silver Institute for Mexico and Central America, donated a previously minted handsome Mexican silver bullion coin as a prize at the Institute's Phoenix, Arizona meeting. The winner of the coin, Francis McAllister of ASARCO Inc. is pictured receiving the coin, with Richard Davies, Executive Director of the Institute at the left and Ricardo Chico at the right.

The **new** 999 pure silver coin, the "Libertad", is a legal tender bullion coin denominated as **1 Onza Plata Pura.** It is the first Mexican coin ever minted in 999 fine silver. Though 950,000 were struck in 1982, the coins have just recently been released. Over 600,000 have been purchased in the United States to date. The mint of Mexico expects to issue a limited mintage of the new coin, pictured at the right, in the coming year. Banks and coin dealers outside of Mexico may obtain the coins through **A-Mark Precious Metals Inc., 9696 Wilshire Boulevard, Beverly Hills, California 90212.**

Among the many other silver coin programs recently announced are the United Nations "Decade for Women" Coin Programme, in which 17 nations are participating. Additional silver coin programs are being conducted by the mints of Hungary, Jamaica, the People's Republic of China, and the Sudan. For information on obtaining these silver coins contact: **Francis Kellogg, 866 United Nations Plaza, Suite 410, New York, N.Y. 10017.**

Of special interest is the "Twenty-five Years Nation-Building" commemorative $5 coin issued by Singapore, showing its native flower. This beautiful coin pictured at right, may be obtained from the Singapore Mint, 249 Jalan Boon Lay, Singapore 2261.

The Royal Canadian Mint is continuing its highly successful Silver Dollar program with the new 1984 issue commemorating the 150th Anniversary of Toronto, Ontario's capital city. The design contrasts the origin of Toronto, "the place of meeting", depicted by an Indian paddling a birch bark canoe, against a background of modern Toronto showing the CN Tower at the center. This outstanding coin, pictured at the right, can be obtained from the Royal Canadian Mint, 355 River Road, 6th Floor, Vanier, Ontario K1A 0G8, Canada.

SILVER INSTITUTE SETS PROGRAM FOR 1985

The Silver Institute Board of Directors, officials of member companies, and guests met at the time of the fall meeting of the American Mining Congress in Phoenix, Arizona, with Chairman William A. Griffith of Hecla Mining Company presiding. At the luncheon meeting, Silver Institute President Richard de J. Osborne and John H. Boyd, Chairman of the Institute's Operations Committee, reported that **the program to be pressed forward in 1985** will include the promotion of the use of silver in national coinages, in premium and incentive programs, in the catalytic manufacture of chemicals, in bonding copper pipe and tubing for drinking-water supply systems, and in lightweight consumer art forms. The program will also include the promotion of silver in toughening alloys,

Attending the Operations Committee meeting of the Institute, standing, l. to r., Carlos Loret de Mola, Cia. Minera Huampar; John Boyd, Kennecott, Committee Chairman; and John Eschenlohr, Degussa. Seated, l. to r., Samuel Etris and John Lutley, Silver Institute staff.

in welding steels, in medicine, and for reducing wear of steel surfaces. These are in addition to the ongoing programs of servicing and extending silver's present uses, producing timely statistics on silver, summarizing the current world research on silver and its products, and preparing detailed information on the worldwide mintages of modern silver coinages.

Three new members of the Board of Directors were elected: pictured, left to right, Edward R. Bergin of ASARCO, Dr. Takeshi Nagano of Mitsubishi Metal, and Daryl Perkins of Johnson Matthey.

MARKET FOR SILVER-TIN SOLDERS EXPANDING DUE TO DEMAND FOR PURE DRINKING WATER

At the Silver Institute meeting in Phoenix, Robert M. Henson, Manager, Technical Services, J.W. Harris Company, pictured at left, described the increasing potential for the **use of silver-tin solders in drinking water lines.** Plumbing code authorities in local jurisdictions in the States of Washington, Wisconsin, Oregon, and New York, have adopted stringent restrictions in the use of lead-base solders for copper-tube drinking water service. Much attention to reports of aggressive local waters that have heightened the dissolution of lead-based solders was reported at the seminar held by the Drinking Water Research Division of the United States Environmental Protection Agency, on Plumbing Materials and Drinking Water Quality.

Silver-tin solders provide copper-tube drinking water installations that are not only non-toxic and stronger, but, **because of the superior solder performance, are less expensive than installations made with other solders.**

Mr. Henson stated that about 500,000,000 linear feet of copper pipe and tubing is used in the United States each year and that much of this goes into the 1,675,000 new dwellings now built annually.

The home buyer, who is becoming more conscious of the details of home construction, needs to be brought to understand the **great advantages of copper-tube drinking water systems bonded with silver-tin solders.** It is this program that the J.W. Harris Company, other silver-solder producing companies, the International Copper Research Association, and the national Copper Development Association are pursuing with The Silver Institute.

SILVER IN CONVENIENT FORMS ATTRACT THE ATTENTIVE INVESTOR

Extensive offerings of **silver pieces by Silver Institute member companies** to meet the increasing demand by the public for **conveniently-sized precious metal investment,** were displayed and described by seven representatives attending the fall meeting of the Institute in Phoenix.

Daryl Perkins showed the new series of ten one-ounce fine silver "Freedom" rounds now being

Displaying their silver coins, investment rounds and wafers, and bullion bars are, from left to right: Daryl Perkins, Johnson Matthey Refining, Inc.; Gordon Harris, J.W. Harris Co.; David Lindh, Coeur d'Alene Mines Corp.; James Corkery, Royal Canadian Mint; Carl Peterson, Engelhard Corp.; Jack Albans, Sunshine Mining Co.; and John Eschenlohr, Degussa Corp.

offered by Johnson Matthey. Gordon Harris displayed the one-ounce silver medals made available by J.W. Harris. And David Lindh showed some of the commemorative one-ounce silver pieces sold by Coeur d'Alene Mines.

James Corkery showed beautiful examples of the Royal Canadian Mint artistry in the form of silver commemorative medals, and incentive pieces.

Carl Peterson displayed several examples of small silver ingots and "Prospector" coins made by Engelhard. Jack Albans brought examples of the Sunshine medallions and 100-ounce silver bars. John Eschenlohr rounded out the show by displaying a variety of silver bars offered by Degussa.

Other Silver Institute member companies provide an ever widening range of silver products for this growing market. A beautiful example is the newly minted "Little Mermaid". This 98.6% silver medal is issued by the Dansk Hollandsk Aedelmetal operation of Silver Institute member company, Comptoir Lyon-Alemand Louyot.

STERLING SILVER HOLLOWARE DRAWS INCREASING ATTENTION FOR THE HOLIDAY SEASON

The swelling public interest in sterling silver heritage gifts has the silversmiths preparing new offerings for holiday giving. Among the many sterling gifts now available, is the hand-chased wine goblet of Kirk Stieff, one of the few companies offering such elegance, as seen in the upper left illustration. The upper right shows the latest Reed & Barton Christmas Cross pendant, a faithful reproduction of an 18th century Spanish cross recovered from the wrecked Spanish galleon "Tolosa." The original is on display in the Casas Reales Museum in Santo Domingo.

Historical reproductions are of special interest. The sterling silver punch or baby cup at the lower left is a Williamsburg reproduction offered by Kirk Stieff. The lower left illustration shows an authentic reproduction of a 1768 tankard by Paul Revere (the original of which is to be found at the Winterthur Museum, Wilmington, Delaware), which was crafted by the Reed & Barton silversmiths.

VISITORS TO SILVER INSTITUTE'S ADMINISTRATIVE OFFICE

Among the recent visitors to the Administrative Offices of The Silver Institute were Hans Thalheim (*left*) and Barry Davis (*right*) of ASARCO Inc., shown in the photo, who discussed the promotional and statistical work of the Institute. John H. Boyd of Kennecott Sales Corporation and Chairman of the Institute's Operations Committee, also visited the offices, to consult on the extensive promotional and industrial programs of extending the markets for silver products, being carried out by the Administrative Staff of the Institute.

KEY SPEECH ON SILVER TO AMERICAN MINING CONGRESS

Carl E. Peterson, Executive Vice President, Engelhard Corporation, newly elected member of the Executive Committee of the Silver Institute, addressed a packed meeting at the "Precious Metal Outlook" Session of the American Mining Congress in Phoenix, September 24th. His presentation, "The Demand for Silver as a Non-Industrial Metal," drew attention to the **marked growth of investment demand in the form of small pure silver bars.** The introduction by Engelhard of small collectible investor silver bars created an attractive product available to the small investor. The influence of this growing market offset the then weak sterling silver and coinage markets allowing the total market to continue to expand. In 1984, the trend of small investor demand coupled with the increasing interest in sterling silver and silver coins has supported a **steady upswing in the non-industrial demand for silver.**

Mr. Peterson showed that the relationship between melting down silver items (disinvestment) and the accumulation of pure silver bullion by investors (acquisition) has not been wholly dependent upon metal price. Indeed, as his statistics show, the ratio of meltdown of silver items to acquisition of silver for

investment, has been **steadily moving in favor of silver acquisition,** as is shown in the following tabulation:

Year	Average price of Silver per Troy Ounce	Silver Meltdown (Disinvestment) (Millions of Ounces)	Acquisition of Silver (Investment) (Millions of Ounces)	Ratio
1977	4.62	174	114	1.5:1
1978	5.40	159	115	1.4:1
1979	11.09	175	124	1.4:1
1980	20.63	258	262	1:1
1981	10.52	143	169	1:1.2
1982	7.95	118	145	1:1.2
1983	11.44	142	210	1:1.5

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	August 1984	July 1984	Jan-Aug 1984	Jan-Aug **1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	5,362,979	3,967,038	4.8	4.4	4.4
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	3,452,290	2,545,320	2.8	3.1	3.1
From New Scrap (in-plant clippings, waste) *	2,410,334	2,367,078	1.8	1.6	1.8
TOTAL PRODUCTION	11,225,603	8,879,436	9.4	9.1	9.4
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	4,378,185	2,819,496	3.2	3.1	3.3
Shipped Out as 999 Silver	6,637,917	5,260,080	6.0	5.7	6.0
TOTAL DISPOSITION	11,016,102	8,079,576	9.2	8.8	9.3
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	209,501	799,860	*TOTAL FOR PERIOD* 1.6	2.8	0.3
THESE REFINERS' STOCKS AT END OF PERIOD	2,799,584	2,590,083	2.8	3.7	1.2

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	August 1984	July 1984	Jan-Aug 1984	Jan-Aug 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	13,707,962	10,695,500	13.2	12.8	13.1
From Coins	101,406	130,045	0.1	0.3	0.2
From Old Scrap (used photo film & other products)	2,329,552	4,138,720	3.8	5.8	6.0
From New Scrap (in-plant clippings, waste) *	582,014	992,784	0.9	1.3	1.1
TOTAL PRODUCTION	16,720,934	15,957,049	18.1	20.3	20.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	48,724	1,396,045	1.6	3.3	3.2
Shipped Out as 999 Silver	16,577,361	15,718,638	16.7	17.0	17.1
TOTAL DISPOSITION	16,626,085	17,114,683	18.2	20.3	20.2
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	94,849	−1,157,634	*TOTAL FOR PERIOD* −1.1	−0.5	1.2
THESE REFINERS' STOCKS AT END OF PERIOD	4,734,096	4,639,247	4.7	4.2	5.9

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of additional refiners.

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